



THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of: **SUZUKI, Junichiro, et al.**

Group Art Unit:1772

Serial No.: **10/757,453**

Examiner: **C. P. BRUENJES**

Filed: **January 15, 2004**

P.T.O. Confirmation No.: **5057**

For: **AUTOMOTIVE FUEL HOSE**

SUBMISSION OF APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

October 6, 2006

Sir:

Submitted herewith is an Appeal Brief in the above-identified U.S. patent application.

Also enclosed is a check in the amount of **\$500.00** to cover the cost of filing this Appeal Brief. In the event that any additional fees are due with respect to this paper, please charge Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, KRATZ, QUINTOS,
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Enclosures: Appeal Brief; and check for **\$500.00**



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

APPEAL BRIEF FOR THE APPELLANTS

Ex parte SUZUKI, Junichiro, et al.

AUTOMOTIVE FUEL HOSE

Serial Number: **10/757,453**

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Group Art Unit: **1772**

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APPEAL BRIEF

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P.O. Box 1450
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Date: October 6, 2006

Sir:

This Appeal Brief is respectfully submitted under the Notice of Appeal filed August 14, 2006.

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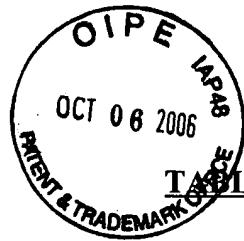


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U.S. Patent Application No.: 10/757,453
APPEAL BRIEF filed October 6, 2006

The real party in interest is Tokai Rubber Industries, Ltd. of Komaki-shi, Japan, as evidenced by the assignment recorded on January 15, 2004, at reel 014897, frame 0416.

II. RELATED APPEALS AND INTERFERENCES

Appellant is aware of no related prior or pending appeal, interference, or judicial proceeding that may be related to, directly affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-8 are pending in this application. No claim has been canceled during prosecution of the application. Claims 1-8 stand rejected, and claims 1-8 are on appeal.

IV. STATUS OF AMENDMENTS

No amendment has been made subsequent to the final Office action dated March 13, 2006.

(The Response under 37 CFR 1.116 dated June 12, 2006, did not contain an amendment).

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Claim 1 is summarized by referencing the text of the claim to the specification and drawings.

Claim 1: “An automotive fuel hose, which comprises:”: The specification explains on page 1, lines 3-7, that the automobile fuel hose will be a hose for gasoline, alcohol-containing gasoline, diesel fuel, or the like.

“a tubular inner layer which is adapted for the flow of fuel, the inner layer comprising a fluororesin having a functional group;”: The tubular inner layer is indicated by reference numeral 1 in the example shown in the one Figure (see page 9, line 12; page 18, lines 13-25). The fuel flows within the tube defined by the inner layer (page 9, line 12). As discussed on page 18, the Figure illustrates a three-layer structure, but the hose is not limited to this structure and may have additional layers, such as an innermost layer on the inner peripheral surface of the inner layer.

In terms of composition, the inner layer comprises a fluororesin having a functional group (page 7, lines 4-5; page 9, lines 17-18). Fluororesins are generally known in the art, and are polymers containing fluorine atoms. The fluororesin is not particularly limited, and examples of fluororesins are given on page 9, line 19, to page 10, line 11. The functional group of the fluororesin is not particularly limited, and examples are given on page 19, lines 14-18.

“a low fuel permeability layer provided about an outer peripheral surface of the inner layer comprising a polyester resin having a naphthalene ring;”: The “low fuel permeability layer” has low fuel permeability (page 6, line 24, to page 7, line 2). The low fuel permeability layer

is indicated by reference numeral 3 in the example shown in the Figure (page 9, lines 12-13). Structurally, the low fuel permeability layer is “provided about an outer peripheral surface of the inner layer,” that is, is outside of the inner layer. As can be seen in the Figure, this recitation does not imply contact with the inner layer. As noted above, the Figure is exemplary and additional layers may be present, such as an outer layer formed on an outer peripheral surface of the low fuel permeability layer (page 20, lines 3-4).

In terms of composition, the low fuel permeability layer comprises a polyester resin having a naphthalene ring. The polyester resin is not particularly limited (page 15, last line, to page 16, line 1), so long as it has the naphthalene ring. Polybutylene naphthalate and polyethylene naphthalate are given as examples on page 16, lines 1-3.

“and an adhesive layer for bonding the inner layer and the low fuel permeability layer comprising a blend of polyamide resin and polyester resin.”: The adhesive layer bonds the inner layer to the low fuel permeability layer, and is seen as layer 2 in the Figure. The specification indicates on page 9, line 13, that the adhesive layer is provided on an outer peripheral surface of the inner layer 1, and that the low fuel permeability layer 3 is provided on an outer peripheral surface of the adhesive layer.

In terms of composition, the adhesive layer comprises a blend of polyamide resin and polyester resin (page 11, lines 16-18). Examples of the polyamide resin are given on page 11, line 17, to page 12, line 8, and of the polyester resin on page 12, lines 9 to 23.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

There is one ground of rejection stated in the final Office action dated March 13, 2006.

A. Whether claims 1-8 are unpatentable under 35 U.S.C. §103(a) over Nishino et al. (U.S. Patent No. 6,089,278) in view of Nishi et al. (U.S. Publication No. 2002/0104575 A1).

VII. ARGUMENT

A. Whether claims 1-8 are unpatentable under 35 U.S.C. §103(a) over Nishino et al. (U.S. Patent No. 6,089,278) in view of Nishi et al. (U.S. Publication No. 2002/0104575 A1).

In arguing against the rejection over Nishino et al. and Nishi et al., Appellant argues that the Examiner's combination of the references, as stated, is improper, and that, in fact, there is no suggestion or motivation in the references or in the general art to combine the references.

1. Appellant's argument that the rejection, as stated, is improper.

Summary of the rejection as stated:

The rejection in paragraph no. 2 of the final Office action of March 13, 2003, is repeated from paragraph no. 2 of the Office action mailed November 3, 2005. In the rejection, the Examiner cites Nishino et al. (column 1, lines 8-10) for teaching an automobile fuel hose comprising an inner layer ("innermost layer 10" in Fig. 1) comprising a fluororesin, a low fuel permeability layer ("middle layer 12") comprising a polyester resin having a naphthalene ring, and an adhesive layer ("adhesive layer 11") for bonding the inner layer and the low fuel permeability layer, where the adhesive layer is a blend of fluororesin, polyester, polyamide and compatibilizer (citing column 9, lines 27-48). The Examiner states that Nishino fails to teach that the fluororesin forming the inner layer has a functional group.

The Examiner cites Nishi et al. as teaching that a fluororesin has a low adhesive property and has inadequate bond strength to bond to polyamide and polyesters (paragraph [0006]), and that an adhesive group is incorporated into the fluororesin to provide enhanced melt adhesiveness

(paragraphs [0023], [0026], [0027]), and that this group may be epoxy, hydroxyl, carboxylic anhydride or carboxylic acid. The Examiner states that:

"One of ordinary skill in the art would have recognized that an adhesive functional group is added to a fluororesin in order to improve the adhesiveness of the fluororesin to other non-fluororesin materials such as polyamides and polyester since fluororesins not containing the adhesive functional groups lack adequate bond strength to materials like polyamide and polyester, as taught by Nishi et al.

Therefore, it would have been obvious ... to add a functional group selected from the group consisting of epoxy group, hydroxyl group, carboxylic anhydride residual group, and carboxylic acid group, in order to provide the fluororesin with increased adhesiveness to materials like polyester and polyamide, since **fluororesins are known in the fuel hose art to possess inadequate adhesiveness to polyamide and polyester**, as taught by Nishi et al." (emphasis added)

Appellant's remarks on the stated rejection.

As understood by the Appellant, in the rejection as stated, the Examiner is modifying Nishino et al.'s hose based on the teachings of Nishi et al. Specifically, Nishino's hose has innermost layer 10 comprising a fluororesin, adhesive layer 11, which is a blend of fluororesin, polyester, polyamide and compatibilizer, and middle layer 12, comprising a polyester resin having a naphthalene ring. The Examiner modifies this by modifying Nishino's innermost layer 10 to be made of a fluororesin containing a functional group (selected from the group consisting of epoxy group, hydroxyl group, carboxylic anhydride residual group, and carboxylic acid group). The stated motivation is that the fluororesin of Nishino's innermost layer 10 possessed "inadequate adhesiveness to polyamide and polyester."

In this stated motivation, the Examiner does not explicitly state which layer of Nishino is being referred to by the "polyamide and polyester." This presumably refers to Nishino's adhesive

layer 11, which the Examiner states as being a blend of fluororesin, polyester, polyamide and compatibilizer, and which is the layer in direct contact with innermost layer 10.

As stated, the Examiner's proposed modification would result in a hose with an innermost layer 10 comprising a fluororesin having a functional group, adhesive layer 11, which is a blend of fluororesin, polyester, polyamide and compatibilizer, and middle layer 12, comprising a polyester resin having a naphthalene ring.

Arguments that the stated motivation for modification of references is improper.

The Examiner's stated motivation for the combination is therefore based on: 1) the inference that, in Nishino et al., there is "inadequate adhesiveness" between Nishino et al.'s innermost layer 10 and adhesive layer 11, and 2) the assertion there is a suggestion that modifying Nishino et al.'s innermost layer 10 to be made of a fluororesin with a functional group would improve this adhesiveness.

However, regarding point (1), Nishino et al. **does not disclose or suggest** that there is any lack of adhesiveness between innermost layer 10 and adhesive layer 11. In fact, Nishino et al. discusses prior art having "poor adhesion between the inner and outer layer" (column 2, lines 20-30), and states that this problem is **solved** in Nishino's invention (column 2, lines 57-58). Nishino et al. clearly states that "the adhesive layer 11 can function to realize adhesion between the innermost layer 10 and the middle layer 12" (column 10, lines 32-33). One must conclude that adhesion between the innermost layer 10 and the adhesive layer 11 is completely adequate in Nishino et al. Therefore,

there is **no suggestion or motivation** in **Nishino et al.** for modification of Nishino's innermost layer 10.

Likewise, there is no direct suggestion in **Nishi et al.** for modifying Nishino's innermost layer 10. The Examiner's proposed modification is based on the general teaching in paragraph [0006] of **Nishi et al.** (see Office action of November 3, 2005, page 4, lines 12-15):

"[0006] Heretofore, there has been the following problem when it is attempted to construct a fuel hose having **a two layer structure comprising an inner layer made of a fluororesin and an outer layer adjacent thereto**, made of e.g. a polyamide. Namely, the fluororesin is, by its nature, a material having a low adhesive property, and even if it is attempted to fuse a tube of a fluororesin directly to the base material of the outer layer, no adequate bond strength is obtainable. Further, even if a bond strength of a certain degree may be obtained, the bond strength is likely to vary depending upon the type of the base material, whereby there has been a problem that the bond strength is practically inadequate." (emphasis added)

Appellant first notes that this paragraph deals specifically with problems associated with a **two-layer structure**, that is, an inner layer made of fluororesin and an outer layer "adjacent thereto" made of polyamide. However, this is **not relevant** to Nishino's invention, which does **not** have a two-layer structure, and in particular, **does not have the innermost layer 10 adjacent to the middle layer 12**. Rather, Nishino's invention has adhesive layer 11 between innermost layer 10 and middle layer 12. (Innermost layer 10, adhesive layer 11 and middle layer 12 would count as three layers).

Since Nishino et al.'s innermost layer 10 (made of fluororesin) is not adjacent to middle layer 12, the teachings of Nishi et al.'s paragraph [0006] are **irrelevant** to Nishino et al. Therefore, Nishino et al. also provides **no suggestion or motivation** for the Examiner's proposed modification of Nishino et al.

Appellant also comments on point (2), above, the Examiner's assertion that modifying Nishino et al.'s innermost layer 10 to be made of a fluororesin with a functional group would lead to "increased adhesiveness." In this regard, the Examiner refers to paragraphs [0023], [0026] and [0027] in Nishi et al. These paragraphs read:

[0023] (1) A fluororesin having adhesive functional groups required for bonding to the outer layer.

[0024] (2) ETFE having at least one of the melt flow property wherein the melt flow rate is at least 40, and an infrared absorption property wherein in the infrared absorption spectrum, it has a distinct absorption peak within a range of a wavenumber of from 1720 to 1800 cm⁻¹.

[0025] A method for introducing adhesive functional groups of (1) may be:

[0026] (1) a method of grafting a compound (hereinafter referred to as a grafting compound) having an adhesiveness-imparting functional group and a connecting group capable of grafting, to the fluororesin (JP-A-7-173230, JP-A-7-173446, JP-A-7-173447, JP-A-10-311461, etc.) and

[0027] (2) a method wherein at the time of polymerization of the fluororesin, at least one of copolymerizable monomers is made to have a functional group.

Appellant notes that these paragraphs specifically refer to bonding the fluororesin "to the outer layer," that is, a situation where the fluororesin layer is **adjacent to** the outer layer (paragraph [0006]). Again, this teaching is irrelevant to the structure in Nishino et al. Contrary to the Examiner's stated motivation, there is no disclosure in paragraphs [0023] to [0027] of Nishi et al. that would suggest that modifying Nishino's innermost layer 10 having "adhesive functional groups" on the fluororesin would have **any** effect on the adhesion to Nishino's adhesive layer 11, since layer 11 clearly does not correspond to the "outer layer" in Nishi et al. in structure or composition.

To summarize, the Examiner's stated motivation for modifying the references is improper, as there is no suggestion in either Nishi et al. or Nishino et al. for the proposed modification of Nishino et al.'s innermost layer 10.

2. Appellant's further argument that there is no suggestion or motivation to combine the references.

Appellant has argued above that the Examiner's stated suggestions and motivations for modifying Nishino et al. are improper. Appellant further argues that there is no suggestion in either reference for a combination with the other. In fact, the teachings of the references **teach away** from any combination of the two references.

Specifically, Nishino et al. discloses a tube having five layers: innermost layer 10, adhesive layer 11, middle layer 12, adhesive layer 13, and outer layer 14 (see column 4, lines 8-13; Fig. 1). Adhesive layer 11 (column 9, line 19, to column 10, line 48) serves to "realize adhesion between the innermost layer 10 and the middle layer 12" (column 10, lines 32-34).

On the other hand, Nishi et al. specifically addresses the case of a hose with a three-layer structure in discussing the background art, in paragraph [0007]:

[0007] Under these circumstances, an attempt has been made to make a hose of a three layer structure wherein a layer of an adhesive is interposed between an inner layer of a fluororesin and an outer layer of a polyamide resin.

This clearly refers to a situation such as that in Nishino et al., in which the innermost layer is made of fluororesin, and outer layer 14 may be polyamide (Nishino et al., column 8, line 51), although Nishino has more than three layers.

Nishi et al. specifically discloses a hose having a "two layer structure" (abstract, paragraphs [0011], [0014]), with paragraph [0011] stating:

"[0011] The present invention has been made to solve the above problems, and the present invention provides a fuel hose having a **two layer structure** comprising an inner layer made of a fluororesin and an outer layer adjacent thereto, ..." (emphasis added)

That is, Nishi et al. is clearly teaching a hose that **does not have an adhesive layer** as a third layer between the inner layer and the outer layer.

That is, Nishi et al. and Nishino et al. adopt **mutually exclusive** solutions to the problem of fuel hose construction. The teachings of Nishi et al. do not suggest any modification of Nishino et al., other than modifications that would involve eliminating the adhesive layer 11. Likewise, Nishino et al. does not suggest any modification of Nishi et al., since Nishino et al.'s hose requires an adhesive layer, while Nishi's specifically does not have one.

Regarding Examiner's arguments in the Advisory action dated July 5, 2006

Appellant had made the argument that Nishi et al. teaches away from a combination with Nishino et al. in the Response filed on June 12, 2006, and the Examiner responded to this argument on page 4, line 6, of the Advisory action, stating:

"... both Nishino and Nishi teach multi-layered fuel hoses, and the rejection relies on the Nishino fuel hose with the addition of a functional group to the fluororesin layer of Nishino for improving adhesion between the fluororesin layer of Nishino and the adhesive layer of Nishino since the middle layer of Nishino contains non-fluorinated materials."

In response, Appellant notes that the statement that "both Nishino and Nishi teach multi-layered fuel hoses" is a simplification that belies Appellant's arguments. It is relevant that Nishi's fuel hose has two layers, while Nishino's fuel hose has five layers, and in particular, it is relevant that Nishino's hose has an adhesive layer, and Nishi's does not. A review of the Examiner's remarks will reveal that the Examiner does not actually provide any rebuttal to Appellant's argument, but merely refers back to the previously stated motivation for the combination of references. Appellant has addressed the errors in the Examiner's stated motivation to modify the references in section (1), above.

Summary

Since there is no suggestion or motivation in either Nishino et al. or Nishi et al. for modification of the other reference, Appellant argues that a *prima facie* case of obviousness cannot be made using the combination of Nishi et al. and Nishino et al. Withdrawal of the rejection of claims 1-8 is therefore respectfully requested.

U.S. Patent Application No.: 10/757,453
APPEAL BRIEF filed October 6, 2006

In the event this paper is not timely filed, Appellant hereby petitions for an appropriate extension of time. The fee for any such extension may be charged to our Deposit Account No. 01-2340, along with any other additional fees which may be required with respect to this paper.

Respectfully submitted,

ARMSTRONG, KRATZ, QUINTOS,
HANSON & BROOKS, LLP



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Appendices: VIII. Claims Appendix
IX. Evidence Appendix
X. Related Proceedings Appendix

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VIII. CLAIMS APPENDIX

Claims 1-8 are involved in the appeal:

Claim 1 (Previously presented): An automotive fuel hose, which comprises: a tubular inner layer which is adapted for the flow of fuel, the inner layer comprising a fluororesin having a functional group; a low fuel permeability layer provided about an outer peripheral surface of the inner layer comprising a polyester resin having a naphthalene ring; and an adhesive layer for bonding the inner layer and the low fuel permeability layer comprising a blend of polyamide resin and polyester resin.

Claim 2 (Original): An automotive fuel hose as set forth in claim 1, wherein the adhesive layer further comprises a compatibilizer.

Claim 3 (Original): An automotive fuel hose as forth in claim 2, wherein the polyester resin having a naphthalene ring for the low fuel permeability layer is either a polybutylene naphthalate or a polyethylene naphthalate.

Claim 4 (Original): An automotive fuel hose as set forth in claim 1, wherein the polyester resin having a naphthalene ring for the low fuel permeability layer is either a polybutylene naphthalate or a polyethylene naphthalate.

Claim 5 (Original): An automotive fuel hose as set forth in claim 4, wherein the functional group of the fluororesin is at least one functional group selected from the group consisting an epoxy group, a hydroxyl group, a carboxylic anhydride residual group, a carboxylic acid group, an acrylate group, a carbonate group and an amino group.

Claim 6 (Original): An automotive fuel hose as set forth in claim 1, wherein the functional group of the fluororesin is at least one functional group selected from the group consisting an epoxy group, a hydroxyl group, a carboxylic anhydride residual group, a carboxylic acid group, an acrylate group, a carbonate group and an amino group.

Claim 7 (Original): An automotive fuel hose as set forth in claim 2, wherein the functional group of the fluororesin is at least one functional group selected from the group consisting an epoxy group, a hydroxyl group, a carboxylic anhydride residual group, a carboxylic acid group, an acrylate group, a carbonate group and an amino group.

Claim 8 (Original): An automotive fuel hose as set forth in claim 3, wherein the functional group of the fluororesin is at least one functional group selected from the group consisting an epoxy group, a hydroxyl group, a carboxylic anhydride residual group, a carboxylic acid group, an acrylate group, a carbonate group and an amino group.

IX. EVIDENCE APPENDIX

No evidence is attached.

X. RELATED PROCEEDINGS APPENDIX

There are no related proceedings.